

ON TWO NEW SPECIES OF PROTURA FROM IOWA, U. S. A.

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Several years ago, Prof. H. B. Mills of the Iowa State College, Iowa, U. S. A., kindly sent me a small collection of Portura from that State for study. Unfortunately, owing to pressure of other work, I have only recently been able to deal with this material.

Two species, described in this paper, are contained in the collection, one a representative of the genus *Proturentomon* Silv. 1909, (*Paraentomon* Wom. 1927), a genus not previously recorded from America; the other, a species of *Eosentomon*, of which 4 species have been described by Ewing and one by Silvestri, from the United States. These earlier descriptions, however, are extremely inadequate and, before other material can be compared, it is urgently necessary that the original specimens and fresh ones from the same localities should be re-examined.

Family ACERENTOMIDAE Berlese 1909

Subfamily **PROTURENTOMINAE** nom. nov.

syn. = *Meroentominae* Womersley, E.M.M. 63 145, 1927.

Protentominae Mills, Bull. Brooklyn Ent. Soc. 27
(2), 129, 1932.

Mills, in his paper (loc. cit.), showed that my change of the generic name *Protentomon* Ewing to *Meroentomon* was not required as the earlier use of *Protentomon* by Mayer (*vide* Imms' Textbook of Entomology) was not in a generic sense but for a purely hypothetical insect; he therefore restored *Protentomon* and substituted the subfamily name *Protentominae* for *Meroentominae*.

Recently, however, Bagnall (*Annals Mag. Nat. Hist.* 17 (10) 1936, 210-212) has shown, (as I suggested in 1927 might be the case), that Berlese's *Acerentulus minimus* is a member of this subfamily, and that it was designated the type of a new genus *Proturentomon* by Silvestri in 1909. It therefore follows that this is the type genus of the subfamily which must assume the name *Proturentominae*.

In the same paper Bagnall considered my species *Paraentomon clevedonense*, from England, to be synonymous with *minimus*, but with this I cannot agree, for, as is shown in the following key, there are definite differences between the species which have to be placed under *Proturentomon*. Further, owing to the inadequacy of

Ewing's description of *Protentomon transitans*, he (Bagnall) would also synonymize this genus with my *Meroentomon* (*Protentomon*), as well as with *Paraentomon*, and all three with *Proturentomon*. Granting the inadequacy of Ewing's description I still consider that there are sufficient differences of generic value to regard the genera *Protentomon* and *Proturentomon* as distinct.

The two genera will be differentiated thus.

Genus *Protentomon* Ewing

Proc. Ent. Soc. Washington 29 (9), 195, 1921: syn. *Meroentomon* Womersley, E.M.M. 63 145, 1927; *Proturentomon* Bagnall (in part), Annals Mag. Nat. Hist. 17 (10) 210-212, 1936.

Dorsal abdominal apodemes absent. A single transverse row of setae on abdominal tergites.

Genotype *P. transitans* Ewing, 1921.

Genus *Proturentomon* Silv. 1909

Atti Acad. Naz. Lincei. Rend 18, 7-10, 1909: syn. *Acerentulus* (auct. in part) *Paraentomon* Womersley, E.M.M. 63, 145, 1927; *Proturentomon* Bagnall (in part) Annals Mag. Nat. Hist. 17 (10) 210-212, 1936.

Dorsal abdominal apodemes present. At least some abdominal tergites with two rows of setae.

Genotype *P. minimum* (Berlese 1908).

KEY TO THE KNOWN SPECIES OF PROTURENTOMON

1. Abdominal tergites VIII to I with an anterior row of 4 strong setae. 3
 Abdominal tergites VIII to I with only 2 fine median setae in anterior row, occasionally these are absent on some tergites. 2
2. Anterior setae absent on tergites VII to V. TR = 3.2. Length 585 μ *P. iowaense* n. sp. Iowa, U. S. A.
 Anterior setae absent only on tergites VII. TR = 3.0. Length 900 μ (extended).
P. clevedonense Womersley 1927, England.
 Anterior setae present on all tergites. TR = 3.0. Length 620 μ .
P. minimum (Berlese 1908), Europe.
3. Sternite VII with 4 strong posterior setae, the median pair with 3 fine setae between them. TR = 3.1. Length 1760 μ (extended). *P. carpaticum* (Jonesco 1930), Roumania.
 Sternite VII with 6 strong posterior setae and one fine one on each side of median pair. TR = 3.66. Length 1240 μ .
P. helenicum (Jonesco 1933), Greece.

Proturentomon iowaense sp. n.

(Fig. A-C)

Length 585 μ (extended). Head, anterior tarsi and apical abdominal segments fairly well chitinised and yellowish. Head shaped as figured, 67.5 μ long by 47.5 μ wide, pseudocelli small, 4 μ long. Leg I 147 μ long, tarsus provided with sensilla as in other species of the genus, 40 μ long, claw 12.5 μ long, TR = 3.2; leg II 75 μ long; leg III 82.5 μ . Abdominal appendages on I and II 2-segmented, 17.5 μ long, on III 1-segmented, shorter. Abdominal tergites chitinised towards apex. Chaetotaxy as figured: tergites with a subposterior row of 6 setae, VIII and IV to I also with 2 fine median anterior setae; sternites as figured. Abdominal segment VIII 57.5 μ long by 25 μ wide. Pectinal organ present on tergite VIII, but teeth indistinguishable. Thin and convex, but definite, abdominal apodemes present.

Locality. Columbus Jnt., Iowa, 26 September, 1932 (H. B. Mills).

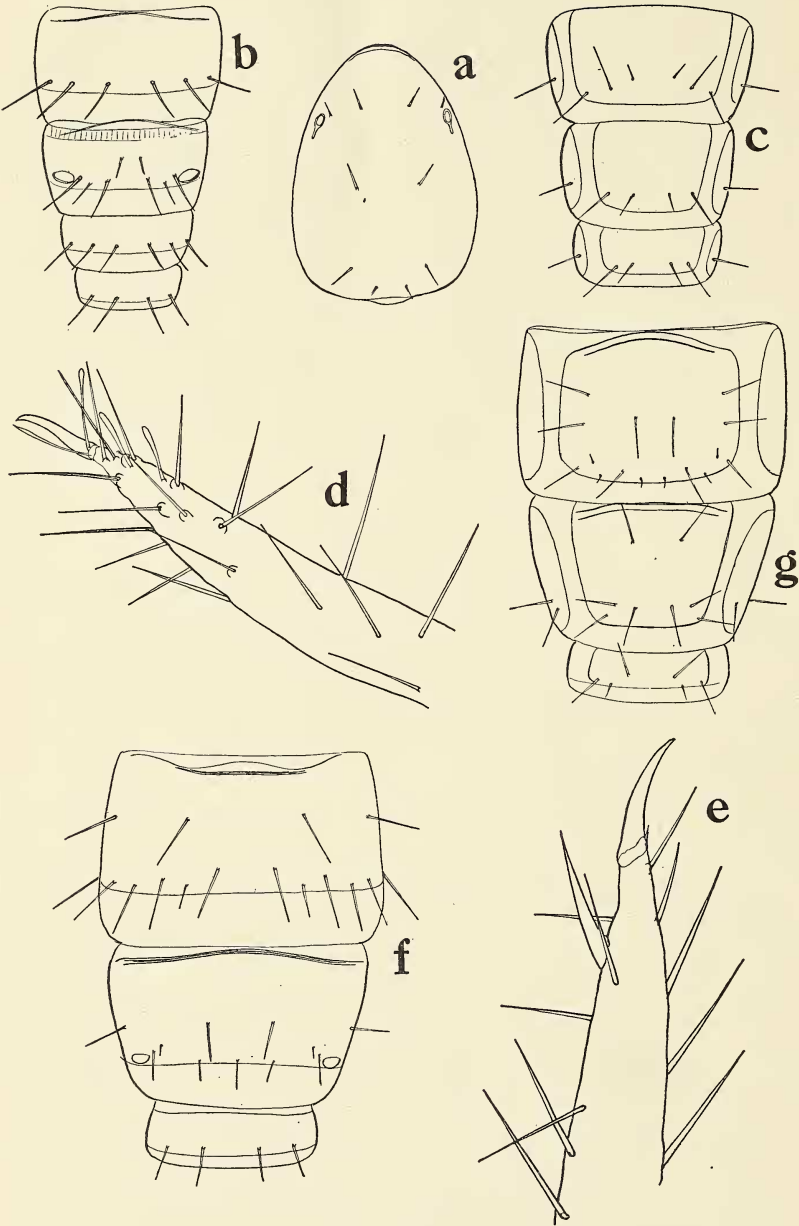
Remarks. This species is the first of the genus to be recorded from America. It can be distinguished from all other species as in the key.

Family EOSENTOMIDAE Berlese 1909

Genus *Eosentomon* Berlese 1909**Eosentomon mills** sp. n.

= *E. ?armatum* Mills 1932, Bull. Brooklyn Ent. Soc. 27, 130 (nec Stach 1926)

Yellowish, well chitinised species belonging to the *armatum* group. Length 900 μ (extended 1350 μ). Head oval, 180 μ long by 120 μ broad. Pseudocelli 8 μ long. Legs I 285 μ , tarsus 89 μ , with empodium and clavate sensilla as in *armatum* Stach, claw S-shaped, 16.5 μ long, TR = 5.4; leg II 157 μ , claw evenly curved, 12.75 μ long; leg III 192 μ long, claw 15.75 μ ; tarsus provided with a subapical strong spine as in *armatum*. Thoracic spiracles normal. Abdominal appendages on sternites I-III equal, 30 μ long by 26 μ wide. Chaetotaxy differing from *armatum* as follows: tergite VIII with median row of 4 long setae and irregular subposterior row of 7 short setae (cf. fig. F), VII with 4 median setae in a row, and 10 long ones subposteriorly (cf. fig. F) sternites VIII with anterior median row of 2 long setae and subposterior row of 7 long ones, VII with



anterior row of 4 long setae and subposterior row of 10 short and long ones, and laterally between each row another pair of long setae (cf. fig. G). In *armatum* Stach tergite VIII has a median row of 6 long setae and a subposterior row of 9 short setae.

Locality. Columbus Jnt., Iowa 26/9/30 (H.B.M. 5 specimens); Leon, Iowa, 10/10/33 (B. V. Travis, 3 spec. from moss); Maryana, Fla., 3/3/33 (H. B. M., in moss in numbers).

Remarks. Close to the European *E. armatum* Stach in the structure of the third tarsus, but differs in value of TR (5.0 in *armatum*, 5.4 in *millsi*), and the chaetotaxy of abdominal segments VII and VIII. The species is appreciatively dedicated to Prof. H. B. Mills. The record of *armatum* (Mills 1932) is probably the above species.

EXPLANATION OF PLATE XII.

A-C. *Proturentomon iowaense* sp. n. a, head from above; b, tergites VII-X; c, sternites VII-IX.

D-G. *Eosentomon mills*i sp. n. d, tarsus of leg I; e, tarsus of leg III; f, tergites VII-IX; g, sternites VII-IX.

An Incidental Observation on Phototropism.—The reaction and response to light is a subject gaining in importance as a method in combating some insect pests. It is not a problem of particular concern to the writer, who merely wishes to place on record the following observations:

Street life in Seattle, Washington, had hardly abated at eleven o'clock on the night of June 26, 1938. The main thoroughfares in the heart of the city were ablaze with multicolors of light.

One of the stores, glaring in blue neon illumination, caused pedestrians to pause to brush themselves and to detour into the street. The disturbance was due to multitudes of moths of two species—a tent caterpillar (*Malacosoma*) and the Satin Moth (*Stilpnotia salicis*.) They were swarming about, settling on show windows, entrance, walls and on the sidewalks, including passers-by. Nothing within the sphere of the light escaped contact. Very few other moths or insects of other orders were represented. Continuing the observation, it was ascertained that lights of other colors—red, yellow, etc.—by comparison had an almost negative attraction.

The congestion of the Tent-caterpillar and Satin Moths at the blue neon light in the solidly built-up center of the city must have involved flights of considerable distances.

For some years the decreasing response of insects to ordinary lights is being reported. Possibly trap lanterns and other devices, when supplemented with blue filters, may be an improvement.—GEO. P. ENGELHARDT, Hartsdale, N. Y.